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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,029	09/29/2003	David C. Huffman	224629	4501

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EXAMINER	
GORMAN, DARREN W	
ART UNIT	PAPER NUMBER
3752	

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/674,029	HUFFMAN, DAVID C.	
	Examiner	Art Unit	
	Darren W Gorman	3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-4 and 6 is/are rejected.

7)☐ Claim(s) 5 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 29 September 2003 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 09/29/2003.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Examiner's Notes

1. Paragraph [0001] of Applicant's specification should be updated to reflect the priority information for this application, since this application claims benefit of PCT/US03/14186, which claims the benefit of US Provisional Application No. 60/378,337.

Information Disclosure Statement

2. The IDS filed on 29 September 2003 is hereby acknowledged and has been placed of record. Please find attached a signed and initialed copy of the PTO 1449.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Reference number "17", as described in paragraph [0009] of the specification, is not shown in the drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Further, Applicant's drawing symbols (crisscrossing diagonal lines) for the elements denoted by reference numbers 22, 24, and 26 in Figure 1, indicate that these three elements are "magnet-coil-electric winding" material (See MPEP 608.02, section IX <Drawing Symbols). Further, in Figure 2, the liquid flow tube is also shown to have crisscrossed diagonal lines, whereas the liquid flow tube (11) in Figure 1 shows parallel diagonal lines, indicating metal composition. Is the liquid flow tube in the embodiment of Figure 2 made from a different material than the liquid flow tube in Figure 1? Should the drawing symbols for each of the elements designated with the crisscrossed diagonal lines in Figures 1 and 2 be amended to designate a different material composition?

Specification

4. The disclosure is objected to because of the following informalities:

In paragraph [0008], on line 4, [U.S. Patent 5,372,885] should be replaced with --U.S. Patent 5,732,885--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Behr, USPN 4,073,436.

Behr shows a liquid atomizing nozzle (see Figures 1 and 2) comprising: a longitudinal liquid flow passageway (18) that terminates in a liquid orifice for directing a stream of liquid along a predetermined axis (12); a plurality of intersecting, transverse passageways (30) extending perpendicularly to and intersecting the predetermined axis, each of the transverse passageways terminating at either end in an outlet, the transverse passageways defining a first impingement surface downstream of the liquid orifice for breaking up a stream of liquid impinging thereon into a laterally spreading dispersion which disperses through the transverse passageways; an air annulus (36) arranged in surrounding relation to the outlets of the transverse passageways and oriented to discharge air in a downstream direction so as to strike the fluid dispersed through the outlets of the transverse passageways, the air annulus having an inlet portion (downstream end of sleeve 6) that flares inwardly in the downstream direction; an expansion chamber (40) arranged downstream of the transverse passageways and the air annulus, the expansion chamber communicating with a nozzle discharge orifice (38); and an impingement element disposed in the expansion chamber, the impingement element defining an impingement surface (inside surface of jacket 4) downstream of the transverse passageways and the air annulus.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Behr, in view of Haruch, USPN 5,868,321.

Behr shows all of the claimed limitations as set forth in claim 2, however Behr shows a single annular nozzle discharge orifice arranged circumferentially about the impingement element, rather than a plurality of circumferentially arranged discharge orifices.

Haruch teaches that it is old and well known in the art of liquid atomizing nozzles to form a desired spray pattern by forcing atomized liquid through a properly shaped nozzle discharge orifice means (see column 1, lines 29-37). Such varying spray patterns may be formed by providing any of several known and interchangeable user-selected orifice means such as a single annular discharge orifice, a plurality of angularly spaced discharge orifices, an elongated slot, or an elliptically shaped orifice.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute a plurality of nozzle discharge orifices, as taught by Haruch, for the single annular nozzle discharge orifice of Behr, in order to form a desired spray pattern as selected by the user with a desired result in mind.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Behr, in view of Haruch, USPN 6,267,301.

Behr shows all of the claimed limitations as set forth in claim 1, however Behr does not expressly show the longitudinal liquid flow passageway including a portion having a reduced

cross-sectional area relative to the remainder of the longitudinal liquid flow passageway, the reduced cross-sectional area portion being arranged at a downstream end of the passageway.

Haruch shows a liquid atomizing nozzle having a longitudinal flow passageway (14), a downstream portion thereof including a portion (30) having a reduced cross-sectional area relative to the remainder of the flow passageway in order to accelerate the velocity of the pressurized liquid passing through the flow passageway, as is well-known and "understood by one skilled in the art" (see column 3, lines 14-20) to improve pre-atomization of liquid in liquid-atomizing nozzles.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a portion of reduced cross-sectional area, as taught by Haruch, at a downstream end of the liquid flow passageway shown by Behr, in order to accelerate the velocity of the pressurized liquid passing through the flow passageway to improve pre-atomization of the liquid.

Allowable Subject Matter

10. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Further, Examiner would like to suggest that Applicant focus on clearly and precisely claiming the increased velocity of the airflow in the air annulus as a result of the inwardly flared portion of the air annulus, and the proximity of the inwardly flared portion of the air annulus in relation to the outlets of the transverse passageways.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent to Shimoda et al., Haruch, and Huffman, are cited as of interest.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darren W Gorman whose telephone number is 703-306-4205. The examiner may be reached at the above telephone number until November 18, 2004 and may be reached at (571) 272-4901 after November 18, 2004. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on 703-308-1272. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Darren W Gorman
Examiner
Art Unit 3752

DWG 10/14/04
DWG
October 14, 2004

David A. Scherbel
Supervisory Patent Examiner
Group 3700